

ARROWHEAD ENGINEERING, Inc.**David M. Cosgriff, P.E.**

P.O. Box 843
1504 Kaniksu Ave.
Libby, MT 59923

Phone (406) 293-9387
Fax (406) 293-8922
E-mail: arrowhead@libby.org

December 7, 2000

Mr. Alan Stringer
W.R. Grace & Co.
317 Mineral Avenue
Libby, MT 59923

Re: EXPORT PLANT SITE – STRUCTURAL ANALYSIS
OF FLOOR OVER ROOMS IN PLANER BUILDING

Dear Mr. Stringer:

The following drawings and specifications are intended to provide a properly engineered ceiling/storage floor over the three rooms (rest room, lunch room, and grinding room) in the planer building at the Export Plant project area. The ceiling/floor over the rooms is intended to be used for a light storage area. Therefore, the loading was assumed for a second floor, light loading in a commercial warehouse (75 psf live load). These drawings and specifications are intended to provide the specifications for the flooring structure and attaching the floor to the outside wall of the existing planer building structure. Some field fitting will be necessary due to the varying ground grade within the building and variations in some dimensions. However, the main purpose of these designs is to ensure that appropriate loading of the floor will not exceed the structural capacity of the system.

Any modification to these plans and specifications must be approved by David Cosgriff of Arrowhead Engineering, Inc.. Modifications made by another person will nullify these plans and specifications. Minor changes to the anchoring systems may be approved with a letter after discussion with the contractor or installer. The attachments are considered part of this submittal.

Attachments Include:

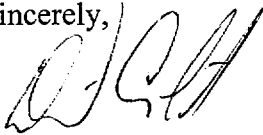
- Sheet 1 of 2: PLAN VIEW
- Sheet 2 of 2: ELEVATION DETAIL – COMPONENTS
- Installation Notes

ARROWHEAD ENGINEERING, Inc.
David M. Cosgriff, P.E.

Mr. Alan Stringer
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Page 2

If you have any questions regarding these plans and specifications, please feel free to call me at (406) 293-9387.

Sincerely,



David Cosgriff, P.E.
Montana Registration Number: 10425PE

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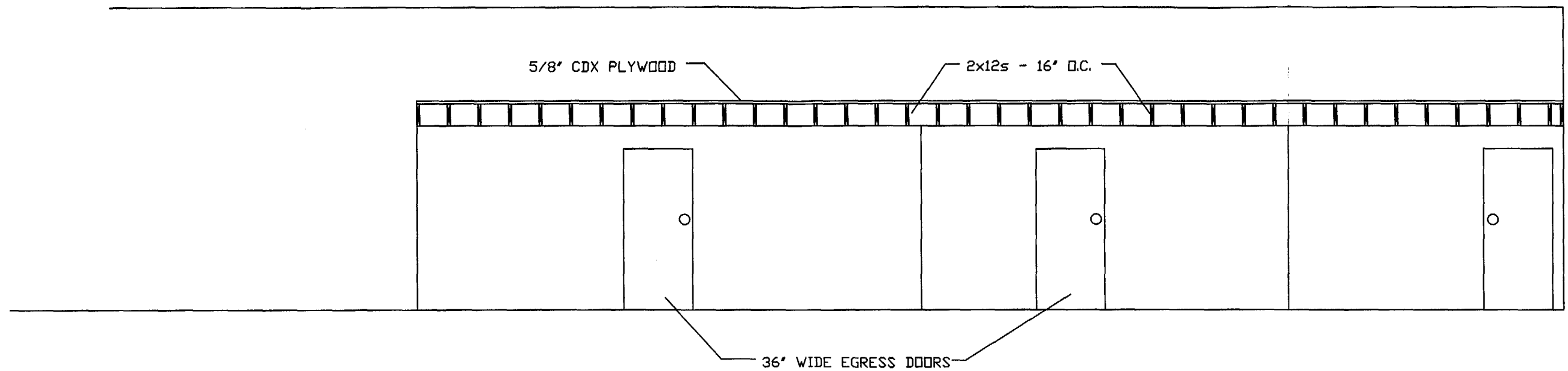


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INSTALLATION NOTES:

1. Framing construction shall be in accordance with standard practice. The outside wall of the interior rooms shall be constructed as bearing walls due to the anticipated loading on the ceiling.
2. The interior bearing walls shall have a double sill plate, double trimmer at doorway openings, and headers over the doorway openings.
3. The ceiling joists shall be attached to the outside existing wall utilizing a 2x12 mounted at the appropriate height (field fit) with two, 4.5"x1/4" lag bolts – 24" O.C. Holes (1/8") shall be pre-drilled before bolting the 2x12 header to the wall.
4. The ceiling joists shall be attached to the 2x12 header using 2x12 metal joist hangers. The joist hangers shall be installed in accordance with the manufacturer's recommendations.
5. Egress doors from the rooms to the main area shall be 36 inches wide. The bathroom doorway may be 32 inches wide.
6. The ceiling joists shall be 2x12's set 16" O.C. and be of number 2 or better fir or larch. The joists shall bear on the double sill plate on one end and in the joist hangers on the other end.
7. The sheeting on top of the second story floor (2x12's) shall be 5/8" CDX plywood.
8. These plans and specifications assume that construction will be completed by individuals who are experienced in framing construction. These plans are not adequately detailed for installation by non-experienced builders.



	ARROWHEAD ENGINEERING, Inc. P.O. BOX 843 LIBBY, MT 59923	PLANER BUILDING RESTORATION PLAN
SHEET 2 OF 2		ELEVATION DETAIL-COMPONENTS
SCALE: 1"=5'	DRWN BY: D. COSGRIFF	DECEMBER 7, 2000